# Profit-led or Wage-led Regimes: the Effect ofSaving Behaviours

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**Abstract**

In this article, we modify the saving function of the Bhaduri-Marglin model and obtain a hump-shaped curve of output in function of wage-share: the nature -exhilarationist or stagnationist- of the economic regime depends on the level of income distribution. Economic policy can thus consist of shifting income distribution by redistributive policy in order to stimulate output. These conclusions remain valid in open economy, even if the exhilarationist regime is then more likely to arise. At last, we adopt a dynamic perspective by adding a wage equation to the model, which is thus characterised either by cycles or an underemployment equilibrium.

*Key words*: Cycles, Income share, Post-Keynesian theory, Saving, Unemployment.

*JEL Classification*: E12, E21, E24, E25.

## 1. Introduction

Many Post-Keynesian authors (Rowthorn, 1981; Dutt, 1984; Bhaduri and Marglin, 1990; Lavoie, 1995) have tried to show that the relation between growth and income distribution (between wages and profits) was not clear cut. Income distribution determines growth through its effects on both investment and consumption behaviours. Let us suppose an increase of profit share in total value added: this is likely to increase investment by firms but, in the same time, it will have a negative impact on consumption by households. If the first effect is more important than the second one, the regime is *exhilarationist*. On the contrary, if the negative effect on

consumption (we could also say: the positive effect on saving) outweighs the positive effect on investment, the regime is *stagnationist*. The main conclusion is that the nature of the regime crucially depends on the respective sensitivity of both investment and saving to income distribution evolutions. Unfortunately, these sensitivities (which are reflected by constant parameters in this kind of model) are supposed exogenous in the comparative static frame that these authors have adopted. These models thus study the conditions that an economy must fulfil to be either *exhilarationist* or *stagnationist* but dynamic issues explaining how an economy switch from one regime to another are rarely tackled.

One way to introduce such dynamic issues consists of introducing non linearity in investment behaviour by firms. Many contributions which adopted the framework of disequilibrium theory focused on this way in the early 1980s (Artus and Muet, 1986; Muet and Sterdyniak, 1987). These models generally assume that investment equation depends on two components: one for demand effect, one for profitability effect. Actual investment is determined by the "binding" component (i.e. the weakest component). Accordingly, an economy can switch from one regime to another because of a change in the component which restricts investment. However, this framework remains static and the links relating income distribution to economic growth are not the core of the issue anymore.

In this article, we adopt a different perspective: instead of modifying investment function, we focus on saving function. In that perspective, we refer to the Bhaduri-Marglin model that we very slightly modify by changing its saving function. The pretty intuitive hypothesis that we then introduce is that propensity to save by agents increases with their income. Thanks to this new simple hypothesis, we show that the nature of the regime does not depend only on exogenous parameters anymore ; it also depends on the *level* of income distribution. Our main conclusion is thus that the effect of wage-share variations (or, symmetrically, of profit share variations) depends on the initial level of wage share. Note that the hump-shaped curve we finally get had already been suggested by Taylor (1991)[1].

The first section of this article is devoted to a brief presentation of the Bhaduri-Marglin model (1990). In section 2, we modify the saving function of the Bhaduri-Marglin model and show how it allows to generate an inverted U-shaped curve between wage-share and output. In the third section, we briefly analyse the implications of the model for economic policy. In the fourth section, we enrich our model by opening the economy. In the fifth section, we adopt a dynamic perspective by introducing a wage equation in the model: we then show that the dynamic can either be characterised by cycles (the economy switching periodically from *wage* to *profit-led* regime and vice versa) or converge toward a Keynesian equilibrium (characterised by both low wage share and high unemployment rate). At last, we conclude.

## 2. The Bhaduri and Marglin model (1990)

The Bhaduri-Marglin model analyses the effects of income distribution on growth through the impact of profit-share evolutions upon investment and savings. The authors show that the level of activity can be supported either by wages increase (*wage-led* regime) or profits increase (*profit-led* regime).

In their model, consumption is given by:

$$C = (1 - s_w)W + (1 - s_p)P \tag{1}$$

where $W$ is the payroll, $P$ are the total profits ($Y = P + W$), $s_w$ and $s_p$ are saving propensities of workers and capitalists respectively, with $s_p > s_w$. It follows that:

$$\frac{S}{K} = \sigma z \left[(s_w - s_p)\omega + s_p\right] \tag{2}$$

with $K$, the level of physical capital in the economy, $S$ the saving, $\omega = \frac{W}{Y}$ (wage share), $z = \frac{Y}{\overline{Y}}$ (where $\overline{Y}$ is the output level when the capital stock is fully used; $z$ is the rate of capacity utilisation), and $\sigma = \frac{\overline{Y}}{K}$ (constant).

The investment function has two explicative variables: the profit rate $r = \frac{P}{K}$ and the rate of capacity utilisation $z$, which captures a demand effect:

$$\frac{I}{K} = i_0 + i_r\frac{P}{K} + i_z\frac{Y}{\overline{Y}} = i_0 + z(i_r\sigma(1 - \omega) + i_z) \qquad i_r, i_z > 0 \tag{3}$$

where $\omega = \frac{W}{Y}$. As $\frac{I}{K} = \frac{S}{K}$, we get a relation between $z$ and $\omega$:

$$z^* = \frac{i_0}{(i_r - (s_p - s_w))\sigma\omega + ((s_p - i_r)\sigma - i_z)} \tag{4}$$

The "Keynesian stability" condition, according to which saving must be more sensitive to variations of $z$ than investment, implies that the denominator of equation (4) must be positive. The equilibrium of the model $z^*$ is thus positive if $i_0$ is positive, which is assumed afterwards.

An economy is *wage-led* if $\frac{\partial z}{\partial \omega} > 0$ and *profit-led* otherwise. The nature of the economic regime rests only on the sensitivity of both saving and investment to variations of the wage-share $\omega$, i.e. the economy is *wage-led* if:

$$i_r < s_p - s_w \tag{5}$$

From a graphical standpoint, the nature of the regime depends on the sensitivity of the slope of both saving and investment curves to variations of wage-share.

**Fig. 1.** Graphical characterisation of *wage* and *profit-led* regimes.

Therefore the market equilibrium condition implies either an increasing or a decreasing relation between wage share and output. The effect of profit on output is then unclear.

Nevertheless, two important limits of the Bhaduri-Marglin model must be underlined:

- It seems that the *profit-led* regime is unlikely to occur for realistic values of parameters of this model (Blecker, 2002). In the extreme (but usually assumed by many Post-Keynesian authors) case where $s_w = 0$ and $s_p = 1$, the condition for which the economy is *profit-led* becomes (from equation (5)) $i_r > 1$, which is incompatible with the condition of Keynesian stability. Thus, with this extreme but very usual hypothesis on saving behaviours, the regime is necessarily *wage-led*. To get a *profit-led* regime in the Bhaduri-Marglin model, both strong sensitivity of capital accumulation to profit rate and weak propensity to save profits (rather counterintuitive hypothesis) must be assumed.

- In his review of the Bhaduri-Marglin model, Taylor (1991) suggests that the nature of the economic regime can directly depend on the "initial" *level* of wage-share: the greater it is, the more likely is the economy to be *profit-led* (in other words, when wage-share is high, its decrease should boost the level of activity). This rather intuitive interpretation can be illustrated by an inverted U-shaped curve. However, this representation does not correspond at all to the analytical model of Bhaduri-Marglin, since the sign of $\frac{\delta z}{\delta \omega}$ from (4) does not depend on $\omega$. In the Bhaduri-Marglin model, only an "exogenous" shift of parameters in saving ($s_p$ or $s_w$) or investment ($i_r$) functions will allow to switch from one regime to another. Evolutions in income distribution affect the level of activity in the economy but not the nature of the regime (*wage* or *profit-led*).

### 3. Formalising the "Taylor curve"

In this section, we enrich the Bhaduri-Marglin model in order to give a mathematical formalisation of this "Taylor curve", which has, to our knowledge, never been carried out. Indeed, formalising the "Taylor curve" implies to introduce nonlinearities, either in the investment function or in the saving function of the model.

In this article, it is the saving function which is modified. In most of Post-Keynesian models indeed, it is assumed that agents (workers or capitalists) save a constant part of their income; this (constant) saving rate depends only on the kind of the income, wage or profit. This means that, for each kind of income, the marginal propensity to save is constant. On the contrary, we suppose here that:

- on the one hand, the propensity to save income is not related anymore to the nature of income: for every agent, it depends only (and more generally) on level of income of each agent (whatever this income, wage or profit).

- on the other hand, the marginal propensity to save income is positive. If we note $s_i$ the average propensity of agent $i$ to save its income $Y_i$, we then have:

$$s_i = \frac{S_i}{Y_i} = f(Y_i) \tag{6}$$

Moreover, we suppose that $f$ has the shape of a logistic function, i.e. we suppose that :

i) $f(0) = 0$
ii) $f' = \frac{ds_i}{dY_i} \geq 0 \quad \forall Y_i \geq 0$
iii) $\exists Y^* > 0 / f''(Y^*) = 0$
iv) $\forall Y_i < Y^* \quad f''(Y_i) > 0 \quad$ and $\quad \forall Y_i > Y^* \quad f''(Y_i) < 0$
v) $\lim_{Y_i \to Y^*} f(Y_i) = \overline{s}$ and $\lim_{Y_i \to \infty} f(Y_i) = 1$.

The saving rate of agent $i$ is thus depicted in figure 2.

**Fig. 2.** The average propensity to save income by agent $i$ in the model.

In this frame, we distinguish workers from capitalists only by assuming that the profit of each capitalist exceeds $Y^*$, whereas the wage of each worker does not[2]. This hypothesis suggests that capital incomes are more concentrated than labours incomes.

3.1. *Saving behaviour by workers*

We assume that each (employed) worker $j$ supplies one (indivisible) unity of labour, which allows to produce $a$ unities of final good (once capital is installed). The average labour productivity $a$ is supposed constant and identical for all workers. If employed, this worker earns a wage $w$ (identical for any employed worker). If unemployed, the worker earns no income (for simplicity, we suppose that, in that case, $w = 0$). Propensity to save wage by worker $i$ is given by :

$$\frac{S_{w,j}}{w} = s_{w,j}(w) \tag{7}$$

As workers cannot increase their labour supply, every increase of output involves hiring of new workers by firms, so that only wage variations allow to increase the income of employed workers. Moreover, if wage $w$ exceeds the labour productivity $a$, firms will have no interest to produce: this is the reason why $w$ can vary from 0 to $a$ [3]. At last, to fulfill conditions i) to v) presented above, we suppose that:

$$s_{w,j} = \mu\overline{s}\left(\frac{w}{a}\right)^{\beta} = \mu\overline{s}\omega^{\beta} = s_w \tag{8}$$

with $\beta > 1$ and $\mu \leq 1$. Without loss of generality, we suppose afterwards that $\mu = 1$.

Figure 3 displays average propensity to save wage by workers depending on wage share level $\omega$, for different values of $\beta$. In these simulations, we suppose that $\overline{s} = 0.4$ (note that in the Bhaduri-Marglin model, propensity to save wage is constant and does not therefore depend on wage share at all: this case is presented on the figure for $s_w = 0.2$). Note that the more important is $\beta$, the weaker is the propensity to save wage, whatever the wage share level $\omega$.

**Fig. 3.** The propensity to save wage for different values of $\beta$.

3.2. *Saving behaviour by capitalists*

We assume that each "capitalist" $k$ supplies a fixed quantity $m$ of capital, each unity of capital allowing to produce $\sigma$ unities of output (in the case of full utilisation of capital, which is not necessarily the case in our model). As all capitalists are identical, they earn the same profit $rm$, where $r = \frac{P}{K}$ is the profit rate at macroeconomic level. Average propensity to save profit by capitalist $k$ is given by:

$$\frac{S_{p,k}}{rm} = s_{p,k}(rm) \tag{9}$$

On the one hand, as we assume that each capitalist earn an income superior to $Y^*$ (see figure 2), we must suppose that:

$$r \geq \frac{Y^*}{m} \tag{10}$$

On the other hand, we suppose that propensity to save profit $s_{p,k}$ is an increasing function of profit $rm$. In this section, we suppose that $m$ is constant, so that the evolution of capitalists' income depends only on $r$, which can be written:

$$r = \frac{P}{Y}\frac{Y}{\overline{Y}}\frac{\overline{Y}}{K} = \pi z \sigma \tag{11}$$

The return on capital is then bounded by the productivity of capital $\sigma$, so that we can suppose that:

$$s_{p,k} = \widetilde{s}\left(\frac{r}{\sigma}\right)^{\gamma}, \qquad 0 \leq \gamma \leq 1 \tag{12}$$

From (11) and (12), we thus get:

$$s_{p,k} = \widetilde{s}\,(\pi z)^{\gamma} = s_p \tag{13}$$

To be in accordance with figure 2, it is necessary to suppose $\widetilde{s} = 1$. The main difference with the saving rate by workers is that capitalists' income increases with the rate of capacity utilisation $z$: as capital can be underemployed in our model, an increase of output will increase both rate of capacity utilisation and individual

income of capitalists. Nevertheless, this result makes our model more complicated to solve.

3.3. *Equilibrium*
With our new hypotheses on saving behaviours by agents, equilibrium condition of the model (equation (4) of the Bhaduri-Marglin model) is given by:

$$z(i_r - \left(\widetilde{s}(1-\omega)^\gamma z^\gamma - \overline{s}\omega^\beta\right))\sigma\omega + ((\widetilde{s}(1-\omega)^\gamma z^\gamma - i_r)\sigma - i_z) - i_0 = 0 \qquad (14)$$

In a first step, we will suppose that $\gamma = 0$, which means that saving rate by capitalists is constant (and equal to 1), as in Bhaduri-Marglin model, so that only saving behaviour by workers is modified (by comparison to the Bhaduri-Marglin model): this first step allows to get a model which is very easy to solve. In a second step, we will suppose that $\gamma > 0$: with such a condition, the model becomes much more complicated to solve, which compels us to use simulations to present results of the model in that case. At last, as $i_z$ has a quite weak impact on our main conclusion, we will suppose that this parameter is equal to 0.

3.4. *First case: endogenous propensity to save wage ($\beta > 1$), constant propensity to save profit ($\gamma = 0$, $s_p = \widetilde{s}$)*
From equation (14), it results that economy is *wage-led* if:

$$\omega^* < \left(\frac{s_p - i_r}{\overline{s}(1+\beta)}\right)^{1/\beta} \qquad (15)$$

Figure 4 displays the level of activity (captured by the rate of capacity utilisation $z$) according to wage share level $\omega$ for different values of $\beta$. For the simulations, values of parameters are: $\overline{s} = 0.4$, $\widetilde{s} = 1$, $i_r = 0.7$ and $i_0 = 0.12$.

**Fig. 4.** The relation between wage share and rate of capacity utilisation for different values of $\beta$.

From figure 4, we notice that the greater is $\beta$, the greater is the rate of capacity utilisation $z$, whatever $\omega$: this can be easily explained by remembering that propensity to save wages decreases with $\beta$ (for any $\omega$). Moreover, the greater is $\beta$,the more sensitive is $z$ to wage share evolutions. But the main conclusion from figure 4 is that whatever $\beta$, there is a threshold value $\omega^*$ of wage share, separating a *wage-led* from a *profit-led* area. In the Bhaduri-Marglin model, this threshold value does not exist, whatever the values of the parameters in the model. On figure 5, we present the result of the simulation when $\beta = 0$ (other parameters remaining unchanged, by comparison with figure 4), which corresponds to the

Bhaduri-Marglin model when $s_p = 1$, $s_w = 0.2$, $i_r = 0.7$ and $i_0 = 0.12$ (in this case the regime is *wage-led* whatever the level of the wage share).

**Fig. 5.** The relation between wage share and rate of capacity utilisation in the Bhaduri-Marglin model (case of a *wage-led* regime).

Thus a very simple change on saving behaviours by households is sufficient to generate a frame in which the nature of the regime depends on wage share variable. To the left of $\omega^*$ (see equation (15)), every rise of wage share increases output since positive effect on consumption outweighs the (possible) negative effect on investment (note that investment itself may even be supported by an accelerator effect in this case). On the contrary, to the right of $\omega^*$, output level is restricted by insufficient investment and profit-squeeze (every wage share decrease will support investment more than it depresses consumption in this area).

At last, note that:

- on the one hand, the greater $\beta$, the greater $\omega^*$, the threshold value of wage share separating the two regimes.

- on the other hand, the greater $\beta$, the greater the sensitiveness of $z$ (the rate of capacity utilisation) to variations of income distribution.

Table 1 sums up the main conclusions of these simulations:

**Table 1.** Value of the threshold $\omega^*$ for different values of $\beta$.

3.5. *Second case: endogenous propensity to save wages ($\beta > 1$) and profits ($\gamma > 0$)*
We now assume that propensity to save profit is also endogenous. The purpose of this section is only to show that the main conclusion of the previous section is not affected by this additional hypothesis. Thus we take the same values for parameter as previously. We take $\beta = 3$ and make simulations for three different values of $\gamma$: $\gamma = 0$ (as in the previous section), $\gamma = 0.2$ and $\gamma = 0.4$. Figure 6 displays the results.

**Fig. 6.** The relation between wage share and rate of capacity utilisation for different values of $\gamma$.

From figure 6, we notice that the greater is $\gamma$, the greater is the rate of capacity utilisation $z$ whatever $\omega$, because the propensity to save profit decreases with $\gamma$ (for any $\omega$). Moreover, the greater is $\gamma$, the more sensitive is $z$ to wage share evolutions, especially in the *profit-led* regime. Thus the introduction of endogenous propensity to save profits makes the model much more complicated but it does not affect its main conclusions at all, namely the nature of the regime -*wage* or *profit-led*- directly depends on the level of income distribution. This is why, it will be assumed, in next sections and for more simplicity, that $\gamma = 0$.

## 4. Implications for economic policy

One central conclusion of the model presented in previous section is that there is (at least from a theoretical standpoint) a value of wage-share $\omega^*$ for which output is at its optimal level. In this frame, economic policy can consist of leading a redistributive policy which moves the wage-share closer to $\omega^*$. This could be carried out through a fiscal policy, which would transfer income from one kind of agent (worker or capitalist) to another (note however that the purpose of this policy is not equity but efficiency). Such a policy requires a good diagnosis of the economic situation, since a given level of output can result from two different values of wage-share (one in the *wage-led* area and one in the *profit-led* area). Indeed, the fiscal transfer directly depends on the economic regime in which the economy actually is. Fiscal policy consists of boosting demand through the support of either consumption by households or investment by firms. For example, if the economy is in the *wage-led* regime, economic policy will transfer capital incomes toward "labour incomes" (or households)[4].

## 5. Opening of the economy

5.1. *Net exports*

Our model can be enriched by opening the economy. The equilibrium on goods markets is thus given by:

$$\frac{S}{K} = \frac{I}{K} + \frac{X - M}{K} \tag{16}$$

and the equation of net exports formation must be formulated. Bowles and Boyer (1995) assume that net exports are positively related to the national profit rate $r$:

$$\frac{X - M}{K} = x_0 + x_r r \qquad x_r \geq 0 \tag{17}$$

Many explanations can support this hypothesis: a wage share increase may bring about inflation and a loss of competitiveness; higher profit rate will increase investment and R&D expenditure, which will improve technical progress and eventually competitiveness; higher profitability makes easier for firms to reduce their markup on foreign markets, etc.

In the Bhaduri-Marglin model, the new condition for the economy to be *wage-led* is then:

$$i_r + x_r < s_p - s_w \tag{18}$$

So Bowles and Boyer conclude that the economy is more likely to be *profit-led* in the frame of an open economy. In our model, the economy is *wage-led* if:

$$\omega^* < \left( \frac{s_p - i_r - x_r}{\overline{s}(1+\beta)} \right)^{1/\beta} \tag{19}$$

So, the value of the threshold $\omega^*$ separating *wage* and *profit-led* regimes is now weaker (than in the case of a closed economy).

5.2. *Foreign direct investments*

Another way to open the economy is to suppose that investment may be carried out either within the country or overseas, according to the gap between national and worldwide profit rates. In this perspective, investment function is given by:

$$\frac{I}{K} = i_0 + i_r(r - \overline{r}) \tag{20}$$

where $\overline{r}$ is the worldwide profit rate[5]. Equation (20) can be rewritten as follows:

$$\frac{I}{K} = (i_0 - i_r\overline{r}) + i_r r \tag{21}$$

Actually, only the constant term of investment function is negatively affected by the introduction of foreign investments. As the threshold $\omega^*$ does not depend on this constant term, the main conclusions of our model remain unchanged, which is of course not satisfying. As suggested by Blecker (2002), the way through which globalisation is more likely to affect national investment is a change in the sensitivity of investment to profit rate, i.e. an increase of $i_r$ in equation (20). Table 2 gives the evolutions of the threshold $\omega^*$ (separating *wage* and *profit-led* regimes) as $i_r$ increases.

**Table 2.** Value of the threshold $\omega^*$ for different values of $i_r$.

Eventually, the impact of globalisation can be simulated as a shock to the economy which modifies both the constant term (which decreases) and parameter $i_r$ (which increases) in investment function. This shock thus brings about both a decline in output and a shifting of $\omega^*$ to the left, which means that "after" openness, the economy is *profit-led* for weaker values of the wage-share (this result is in accordance with Bowles and Boyer conclusion). This shifting might also make the economy switch from one regime (*wage-led* regime) to another (*profit-led* regime) as it is depicted in figure 7. Indeed, a drop of wage share may now boost national investment (by improving national profitability relatively to worldwide profitability) and increase output (in spite of consumption reduction). At last, redistributive policy is likely to be more difficult in such a context, especially because of capital incomes flight.

**Fig. 7.** The relation between wage share and rate of capacity utilisation before and after international openness.

## 6. A dynamic model

We now introduce dynamic aspects in our model. For that, we propose a very simple wage equation that we combine with our inverted U-shaped curve (corresponding to equilibrium on the goods market). So, the dynamic dimension of the model comes from the endogeneity of the wage share. In our model, we suppose that labour productivity $a$ remains constant over time, so that wage share remains constant if real wage remains itself constant[6]. We simply suppose that when employment level (captured in our model by the rate of capacity utilisation) is high, workers manage to get higher (real) wages $w$, because their bargaining power is stronger when the economy is closer to full-employment. Thus, we suppose that, beyond a certain value $\overline{z}$ of the rate of capacity utilisation $z$, real wage is positively related to $z$:

$$\begin{cases} w = \overline{w} & \text{for any} \quad z < \overline{z} \\ w = \overline{w} + \theta z & \text{otherwise} \end{cases} \tag{22}$$

Note immediately that these equations can be rewritten as:

$$\begin{cases} \omega = \overline{\omega} & \text{for any} \quad z < \overline{z} \\ \omega = \overline{\omega} + \rho z & \text{otherwise} \end{cases} \tag{23}$$

with $\overline{\omega} = \frac{\overline{w}}{a}$ and $\rho = \frac{\theta}{a}$.

On Figure 8, we accordingly combine our inverted U-shaped curve with our wage-setting curve. On the one hand, output is set on the goods market by aggregate demand, which itself depends on the wage share (through its impact on both investment and consumption). As long as wage share is below $\omega^*$ (but beyond $A$), there is a virtuous dynamics: wage increases support consumption (and maybe also investment) and eventually output, which in turn brings about wage increases. On the contrary, beyond $\omega^*$, profits are squeezed so that every wage increase depresses investment more than it boosts consumption. Only a decrease of the wage share could recover investment and output in this area. This wage drop is actually allowed by the recession consecutive to investment decline. So, this dynamics generates cycles (pretty similar to those depicted by the model of Goodwin, 1967) around one first equilibrium. Nevertheless, we see on figure 8 that this dynamics may also bifurcate to another equilibrium, where wage share and output are both very low. This is the case if the wage share reduction is too important during the recession period (of the cycle). As soon as investment is restored when consumptions drops, cycles are maintained although the model

is demand constrained. However, a strong wage austerity may also depress consumption so much that it prevents investment to recover in spite of the increase of profit share. Consumption and investment thus fall together. Cycles disappear because neither consumption nor investment can sustain demand and output, which induces a cumulative slump: slowdown exacerbates wage-share fall, whereas the economy is in the *wage-led* area. Finally, this "cumulative recession" stabilises to a new equilibrium, characterised by high unemployment and weakness of global demand. This is the reason why we call it a "Keynesian equilibrium".

**Fig.8.** Combining the inverted U-shaped curve with a wage-setting curve.

## 7. An interpretation of the French economic dynamic since 1970

Thanks to this model, we propose an interpretation of growing unemployment which characterised the French economy in the 1980s and 1990s. In the 1960s, unemployment remained below 3 %. This situation strengthened the bargaining power of trade unions in a context of labour productivity growth slowdown. This partly explained the takeoff of wage-share in the 1970s which squeezed profits and reduced investment (Bruno and Sachs, 1985). At the beginning of the 1980s, the competitive disinflation was run with the purpose to decrease unemployment by promoting exportations through inflation fight (Blanchard and Muet, 1993) and investment through profit recovery (and wage austerity). Unfortunately, the rise of profit-share in the 1980s came along with a very short decrease of unemployment. Our model proposes an explanation of the lasting and joint increase of unemployment and profit-share (which reached historical high levels in the 1990s without sensitive effect on investment) from 1982 to nowadays: the French economy might well be stuck for fifteen year in a "Keynesian equilibrium" because wage-share dropped too much, which has a strong negative effect of demand.

**Fig. 9.** The relation between wage share and unemployment rate in France from 1970 to 2005.

## 8. Conclusion

In this article, we enrich the Bhaduri-Marglin model (1990) by supposing that saving behaviours (more precisely, average propensity to save income) by agents vary as their income changes. Such a pretty simple hypothesis allows to generate a analytical framework where the nature of the economic regime –*wage* or *profit-led*, as underlined by Bhaduri and Marglin– depends directly on income distribution, i.e. the level of the wage share (or profit share symmetrically): this means that

there exists a threshold value of wage (or profit) share $\omega^*$ which separates the two distinct regimes. To the left of $\omega^*$, economy is *wage-led*, to its right, economy is *profit-led*. Such a result is obtained by just assuming that, for "extreme" income distributions, national saving rate increases a lot. This result has also important implications for economic policy. First, to a same level of unemployment can correspond very contrasted economic policies, depending on whether the economy is *wage* or *profit-led*. Secondly, economic policy must try to move income distribution closer to $\omega^*$. We then show that the *profit-share* area is likely to be larger as international openness arises. In the same time, economic policy will be more difficult to lead (greater capital mobility, increasing fiscal competition, etc.). At last, we introduce in such a framework a wage formation equation to make this model dynamic. We then show that the model can generate economic cycles, the economy oscillating between *wage* and *profit-led* regimes: if economy is in its *wage-led* area, a virtuous cycle can happen: wage increases support consumption and eventually output which in turn brings about wage increase. Unfortunately, wage share will finally go beyond $\omega^*$, which will depress investment and cause a recession. This recession dampens wages, which in turn restores output, and so on. However we show that a too large wage decrease can reduce consumption so much that investment will not take off despite profit restoration. In that case, investment and consumption decline together as in a typical Keynesian unemployment case. This theoretical result allows to understand the trajectory of the French economy from 1970 to nowadays.

## Bibliography


Artus, P. and Muet, P.-A. 1986. Investissement, contraintes de débouchés d'emploi et contraintes financières : estimation d'un modèle à plusieurs régimes, pp. 211-244 in Artus P. and Muet P.-A.(eds), *Investissement et emploi*, Paris, Economica

Bhaduri, A. and Marglin, S. 1990. Unemployment and the Real Wage: the Economic Bases for Contesting Political Ideologies, *Cambridge Journal of Economics*, vol. 14, no. 4, 375-393

Blanchard, O-J. and Muet, P-A. 1993. Competitiveness through Disinflation: an Assessment of the French Macroeconomic Strategy, *Economic Policy*, vol. 8, no. 1, 12-56

Blecker, R. A. 2002. Distribution, Demand and Growth in Neo-Kaleckian Macromodels, pp. 129-152 in Setterfield M. (eds), *The Economics of Demand-led Growth*, Cheltenham, Edward Elgar

Bruno, M. and Sachs, J. 1985. *The Economics of Worldwide Stagflation*, Oxford, Basil Blackwell

Bowles, S. and Boyer, R. 1995. Wages, Aggregate Demand and Employment in an Open Economy: an Empirical Investigation, pp. 143-171 in Epstein G. A.and

Gintis H. M (eds), *Macroeconomic Policy after the Conservative Era*, Cambridge, Cambridge University Press
Canry, N. 2005. Régime *wage-led*, régime *profit-led* et cycles : un modèle, *Economie Appliquée.* vol. 58, no. 1, 143-163
Dutt, A. K.1984. Stagnation, Income Distribution and Monopoly Power, *Cambridge Journal of Economics*, vol. 8, no. 1, 25-40
Goodwin, R.M. 1967. A Growth Cycle, pp. 54-58 in Feinstein, C. H. (eds), *Capitalism and Economic Growth*, Cambridge, Cambridge University Press
Lavoie, M. 1995. The Kaleckian Model of Growth and Distribution and its Neo-Ricardian and Marxian Critics, *Cambridge Journal of Economics*, vol. 19, no. 6, 789-818
Muet, P.-A. and Sterdyniak, H. 1987. Investment, Profitability and Classical Unemployment, pp. 319-356 in Champsaur P. and *alii* (eds), *Essays in Honor of Edmond Malinvaud*, Cambridge, Mass. and London, MIT Press
Rowthorn, R. 1981. Demand, Real Wages and Economic Growth, *Thames Papers in Political Economy*, Autumn, 1-39
Taylor, L. 1991. *Income Distribution, Inflation and Growth. Lectures on Structuralist Macroeconomic Theory*, Cambridge, Mass. and London, MIT Press
Taylor, L. 2004. *Reconstrcuting Macroeconomics: Structuralist Proposals and Critiques of the Mainstream*, Harvard, Harvard University Press

**Footnotes**

[1] Note also that, for simplicity and following Taylor (1991, 2004), we use indifferently the terms "*exhilarationist* regime" and "*profit-led* regime" in this article i.e. an economic regime in which a rise of profit-share increases output (precisely the rate of capacity utilisation), even though these terms correspond to different concepts in Post-Keynesian literature. Likewise, we use indifferently the terms "*stagnationist* regime" and "*wage-led* regime" i.e. an economic regime in which a rise of wage-share increases output.

[2] We also suppose, which is a strong hypothesis, that capitalists are not workers, and *vice versa*.

[3] This result implies that, in our model, $a < Y^*$.

[4] It will be quite the contrary (for example, economic policy could thus boost investment either through subsidies or through tax incentive measures) if the economy is *profit-led*. Moreover, note that redistributive fiscal policy allows to increase households (workers) incomes without increasing labour costs.

[5] Remember that we suppose, for simplicity, that $i_z = 0$.

[6] If labour productivity grows at a constant pace, wage share is constant as long as the real wage grows at the same pace as productivity.

## Figures

**Fig. 1.** Graphical characterisation of *wage* and *profit-led* regimes.

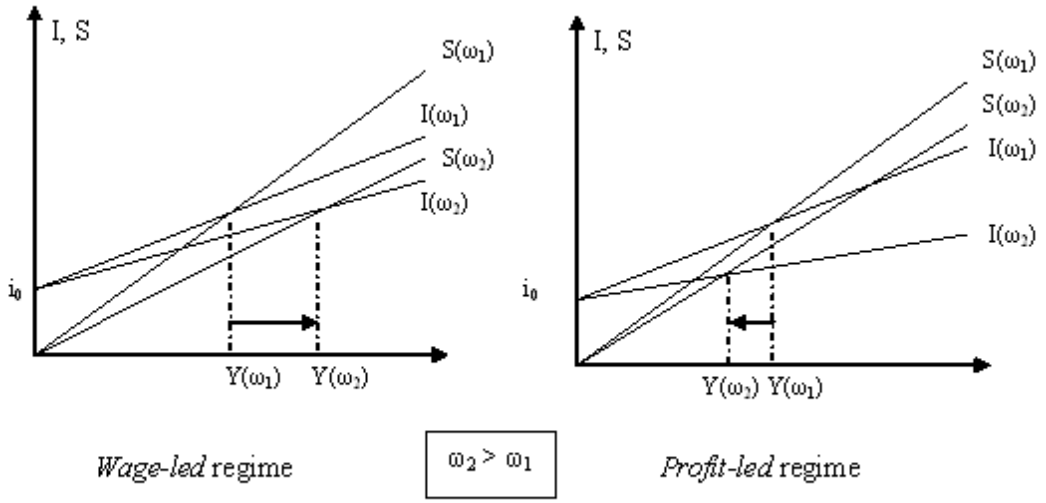



**Fig. 2.** The average propensity to save income by agent $i$ in the model.

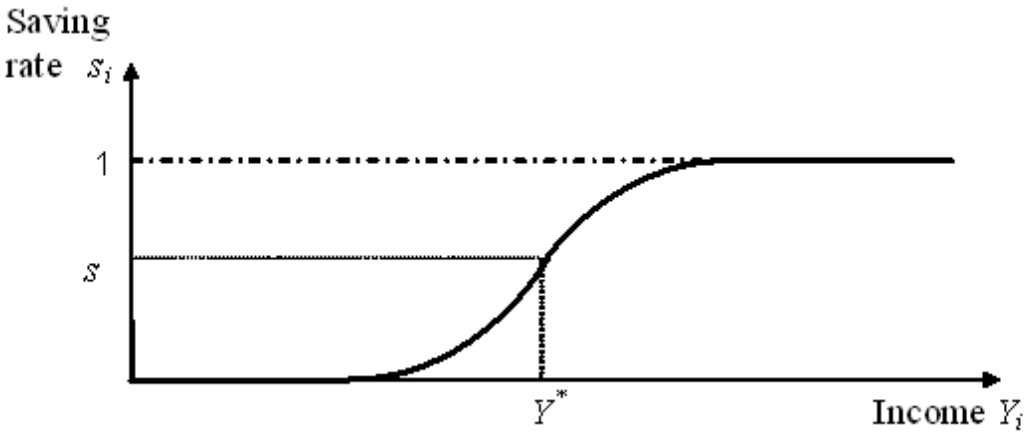


**Fig. 3.** The propensity to save wage for different values of $\beta$.

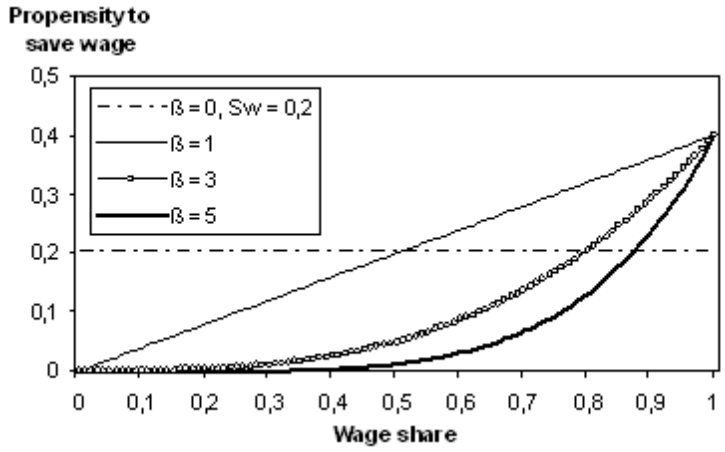



**Fig. 4.** The relation between wage share and rate of capacity utilisation for different values of $\beta$.

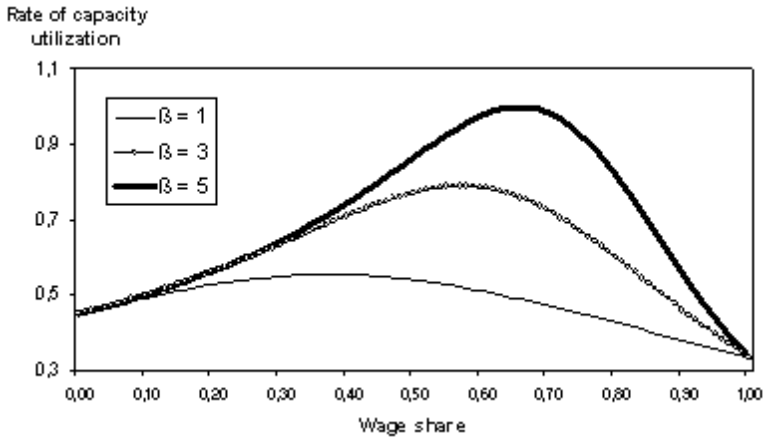


**Fig. 5.** The relation between wage share and rate of capacity utilisation in the Bhaduri-Marglin model (case of a *wage-led* regime).


**Fig. 6.** The relation between wage share and rate of capacity utilisation for different values of $\gamma$.

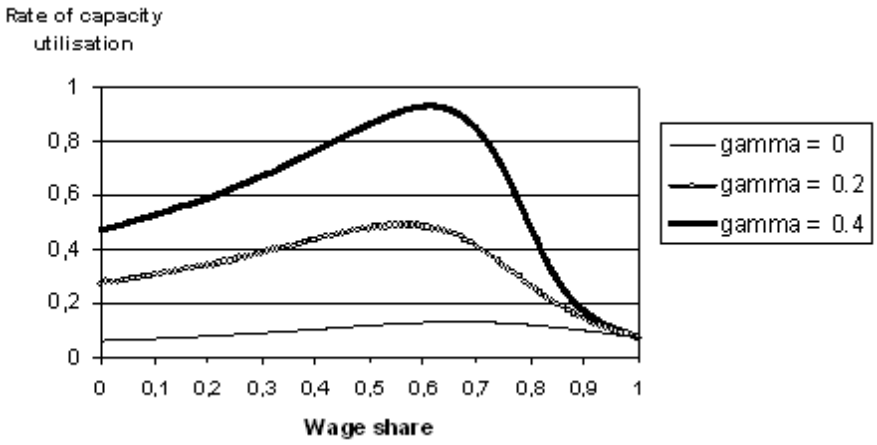


**Fig. 7.** The relation between wage share and rate of capacity utilisation before and after international openness.

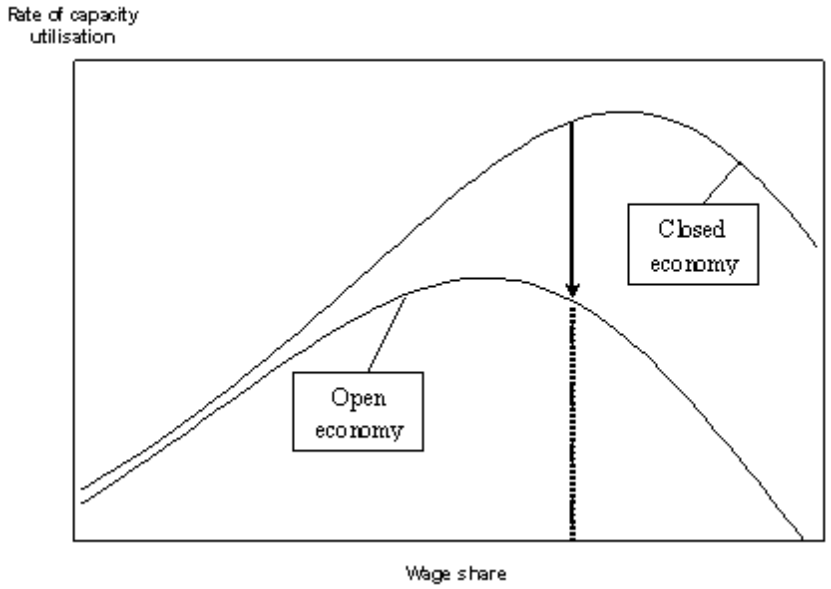



**Fig.8.** Combining the inverted U-shaped curve with a wage-setting curve.

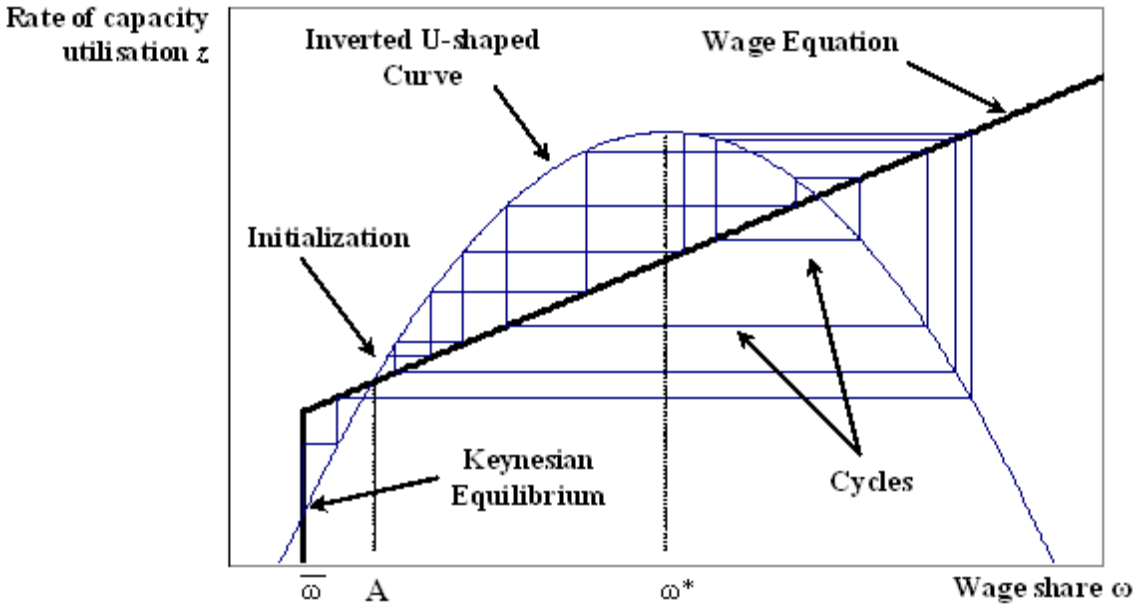
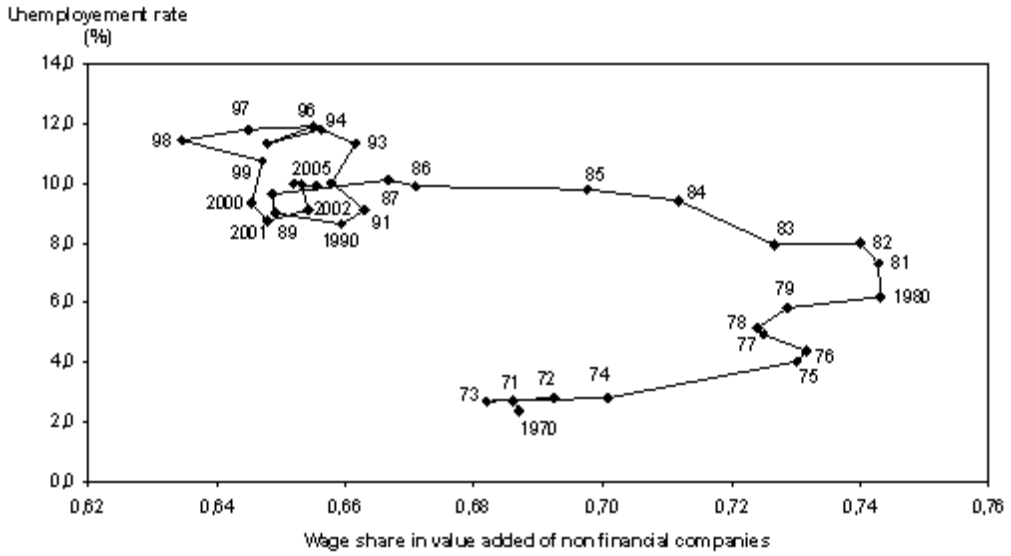


**Fig. 9.** The relation between wage share and unemployment rate in France from 1970 to 2005 (sources: INSEE, National Accounts).



## Tables

**Table 1.** Value of the threshold $\omega^*$ for different values of $\beta$.

| $i_r = 0.7$ and $s_p = 1$ | | |
|---|---|---|
| | $\omega^* =$ | $s_w = 10$ % when $\omega =$ |
| $\beta = 1$ | 0.60 | 0.40 |
| $\beta = 3$ | 0.67 | 0.74 |
| $\beta = 5$ | 0.72 | 0.83 |

**Table 2.** Value of the threshold $\omega^*$ for different values of $i_r$.

| $\beta = 3, \gamma = 0, s_p = 1$ | |
|---|---|
| $i_r =$ | $\omega^* =$ |
| 0.4 | 0.72 |
| 0.5 | 0.68 |
| 0.6 | 0.63 |
| 0.7 | 0.57 |
| 0.8 | 0.50 |